

T. A. EDISON.

Improvement in Rheotomes or Circuit-Directors.

No. 131,334.

Patented Sep. 17, 1872.

Fig. 2.

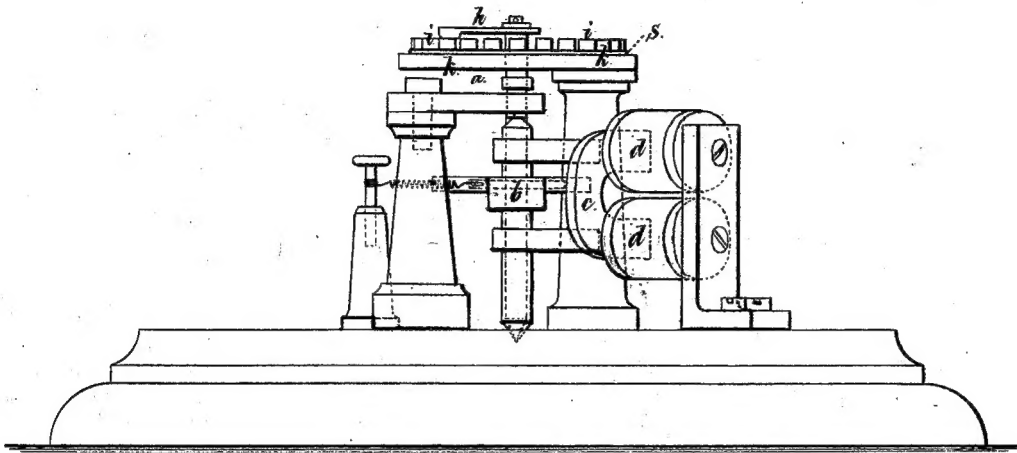
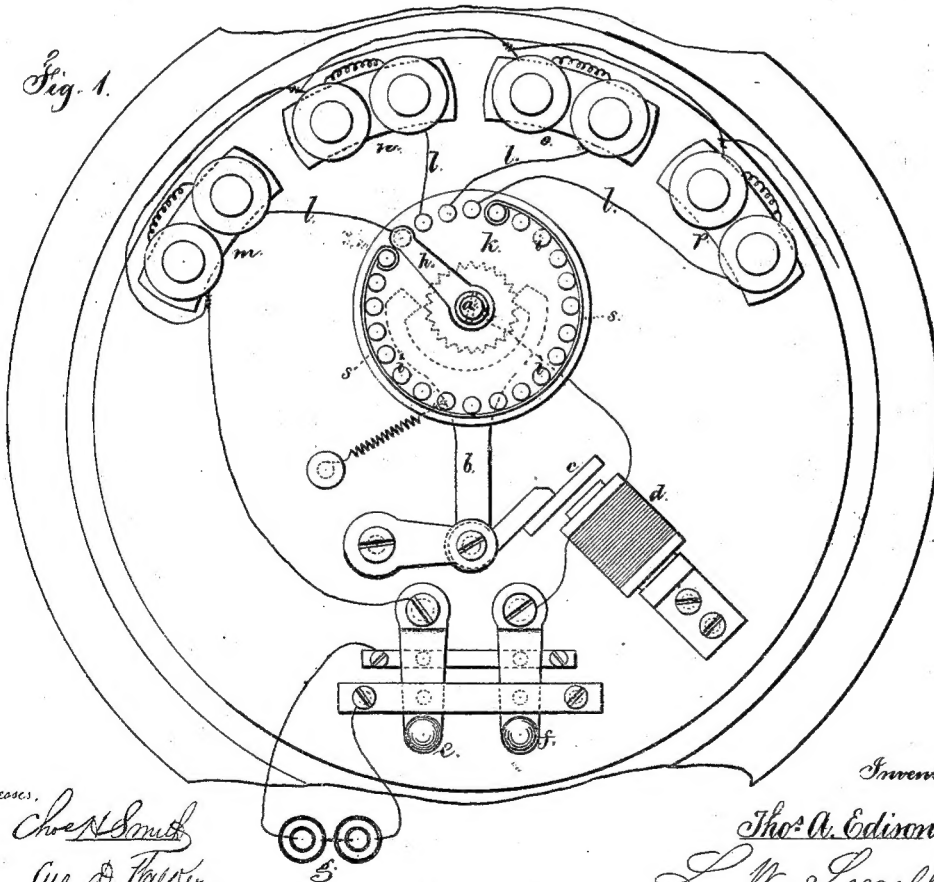


Fig. 1.



Witnesses,  
*Chas. A. Smith*  
*Geo. D. Haller*

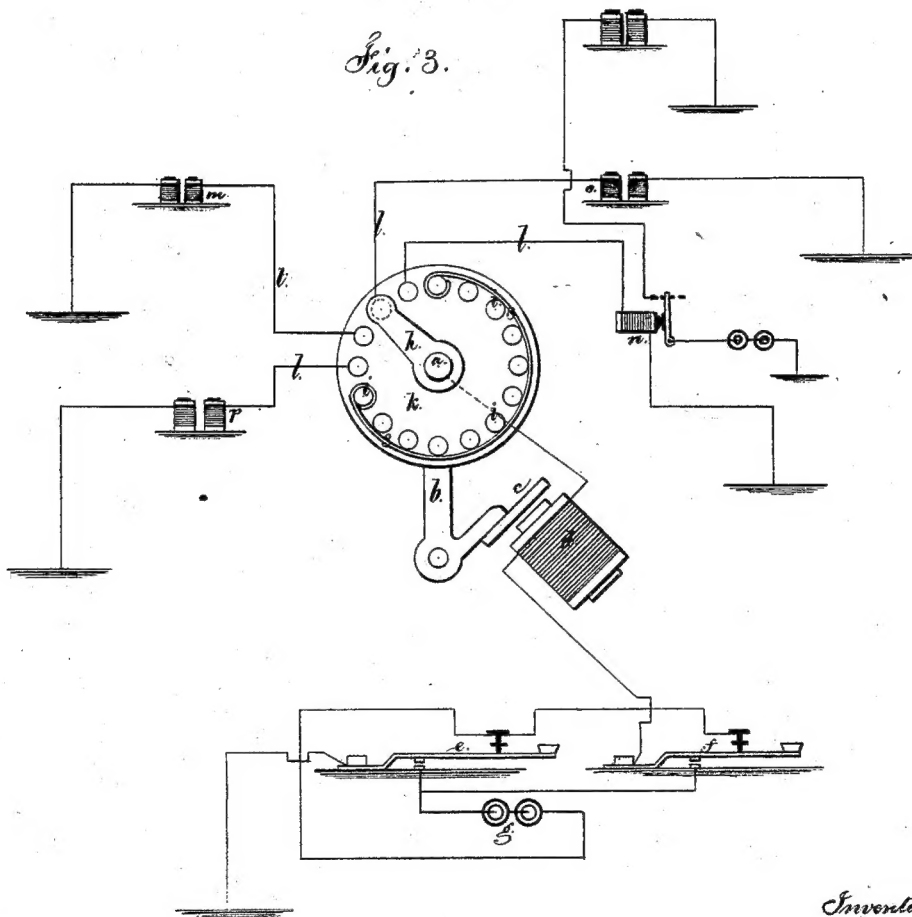
Inventor,  
*Thos. A. Edison*,  
*L. W. Serrell* atty.

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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN RHEOTOMES OR CIRCUIT-DIRECTORS.

Specification forming part of Letters Patent No. 131,334, dated September 17, 1872.

### *To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Newark, in the county of Essex and State of New Jersey, have invented an Improved Rheotome or Circuit-Director; and the following is declared to be a correct description of the same.

This invention is for selecting from a number of telegraphic circuits the particular one to which a message is to be communicated. For instance, a connection from the sending-station, say at New York, may pass to this improved instrument located, say at Philadelphia, and by operating said instrument at Philadelphia by a negative current, a connection may be opened with a line to Reading, Harrisburg, Baltimore, or any other desired point, and communication be made direct or through a relay by pulsations of positive polarity, the rheotome instrument at Philadelphia remaining passive until again operated by a current of the opposite polarity.

I make use of a circuit-closing arm revolved in contact with the circular range of insulated circuit-closing pins by a step-by-step movement actuated by an electro-magnet upon an armature that is polarized, and the circuit is closed through one of said pins to the distant station, or to a relay-magnet to the distant station, and the step-by-step movement is actuated by pulsations of one polarity; but if the opposite polarity is employed there will not be any movement of the rheotome, because the polarity of the electro-magnet is such as to repel the polarized armature.

In the drawing, Figure 1 is a plan of the machine adapted to relay-magnets in local lines. Fig. 2 is an elevation of the said rheotome, and Fig. 3 is a diagram illustrative of the connections.

The vertical shaft *a* is revolved by a step-by-step movement of any desired character. I have shown the lever *b* and a ratchet-wheel. This lever *b* carries a polarized armature, *c*, that is operated by the electro-magnet or magnets *d* in the main-line circuits, and *e* and *f* are finger-keys, by means of which pulsations of positive or negative polarity can be sent over the main line from the battery *g* to the magnet or magnets *d*. The shaft *a* is

also in the main-line circuit and carries the selecting-arm *h*, the end of which moves around in contact with the pins or conductors *i* in the rheotome-plate *k*. The conductors *i* are connected to the wires *l*, that lead to either distant magnets by line-wires or to relay-magnets *m n o p*, that are constructed in any desired manner to operate local or relay circuits, or perform any other desired operation. The end of the arm *h* must be wide enough to reach from one of the conductors *i* to the next while being moved around, otherwise the circuit will be broken, and the hand remain stationary, and I remark that the rheotome is adapted to a large number of circuits; but may be used with only three or four, and a wire, *s*, is employed to connect all the conductor-pins *i* that are not otherwise connected to local or relay circuits, so that the selector-hand may be revolved all the way round in making any selection desired.

The operator energizes the magnet *d* with pulsations that will cause the polarized armature *c* to be attracted, say, of positive polarity, and the current passes from the battery *g* through *f*, *d*, *a*, *h*, *i*, and *l* through one of the electro-magnets *m*, *n*, *o*, or *p*, and by the ground back through *e* to *g*, and according to the number of pulsations, so the arm *h* will stop over one or the other of the pins *i* and make the connection through the same to its magnet. When the key *e* is operated and pulsations of opposite polarity sent, the arm *h* will not be moved because the polarized armature *c* will remain unacted upon. The electric pulsations passing on through *h i l* may act in an electro-magnet to affect any object at *m p o*, Fig. 3. These electro-magnets are shown as at a distant station. They might, however, all be near the rheotome, as illustrated at *n*, to operate relay or local circuits. The wire *s* insures a circuit connection through either of the pins *i* that is not connected to a local or relay circuit.

Instead of using a single magnet, *d*, there might be a double one, and the armature vibrate between the cores; in this instance a retractile spring to the armature is rendered unnecessary, and the rheotome will be set by alternate pulsations of opposite polarity, and

the rheotome will not be moved by a repetition of pulsations of one polarity, and these will act at the distant magnet.

I claim as my invention—

1. The rheotome, formed of the arm *h* and conductor-pins *i*, in combination with the magnet *d* and polarized armature, substantially as and for the purposes set forth.

2. The wire or conductor *s*, connecting the

circuit-pins *i i* of the rheotome, in combination with the arm *h*, magnet *d*, and polarized armature, substantially as set forth.

Signed by me this 6th day of May, A. D. 1872.

T. A. EDISON.

Witnesses:

GEO. T. PINCKNEY,  
CHAS. H. SMITH.